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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,894	12/28/2004	Hinrich Wiese	62584(45107)	9848

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EDWARDS & ANGELL, LLP  
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EXAMINER
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BERNSHTEYN, MICHAEL

ART UNIT	PAPER NUMBER
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1713

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/18/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 10/519,894	Applicant(s) WIESE ET AL.	
	Examiner Michael Bernshteyn	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 20-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-29 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. This Office Action follows a response filed on October 16, 2006. Claim 7 has been amended; no claims have been added, and claims 20-29 have been cancelled.
2. Claims 20-29 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on October 16, 2006.
3. In view of the amendment the objection of claim 7 has been withdrawn.
4. Applicant's arguments see remarks, filed October 16, 2006, with respect to the rejection of claims 1-19 under 35 U.S.C. § 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new rejection is made in view of Ederer et al. (WO 01/26885 A1), Bredt et al. (WO 01/34371 A2),
5. Claims 1-19 are active.

### ***Claim Rejections - 35 USC § 103***

6. The text of this section of Title 35 U.S.C. not included in this action can be found in a prior Office Action.
7. Claims 1-5, 8-10, 12, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable as obvious over Ederer et al. (WO 01/26885 A1) in view of Hiraoka (U.S. Patent 5,589,554).

With regard to the limitation of the claims 1-5 and 12, Ederer discloses a combination of a building material and a bath fluid (supporting fluid) for a method for directly printing components and models, the building material being a liquid resin that is solidified by reaction with a reaction agent contained in the bath fluid (page 11, line 33 through page 12, line 1). The bath liquid consists of **an aqueous solution** (page 11, lines 20-33). This method is substantially identical to the method for directly printing visual-aid models or elements, described in the specification (see the specification, page 2, line 22 through page 4, line 20). The term "liquid resin" (liquid resin material) implies the term "a low-viscosity monomeric or oligomeric compound" used in claim 1.

Ederer discloses that preferably a glycerin solution is used as supporting liquid. Further, the supporting liquid may contain **additives** for reducing tension thereof (page 11, lines 14-17). Appropriate building materials are fusible materials such as wax material or a thermoplastic, having a viscosity of not more than 20 mPa.s, which is within the claimed range (page 11, lines 28-30).

Ederer does not disclose that the building material contains a cyanoacrylate, a mixture of cyanoacrylates or a mixture of one or more cyanoacrylate(s) with additional anionically polymerizable compounds, etc.

Hiraoka discloses an adhesive composition which comprises a 2-cyanoacrylate and at least one of compounds (a) and (b): (a) an addition reaction product of an epoxy group and a compound having a cyano group and a carboxylic acid group in its molecule, and (b) a compound having a cyano group and a carboxylic acid group in its molecule. A process for preparing the adhesive composition is also disclosed.

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According to Hiraoka, the 2-cyanoacrylate-based adhesive composition can be obtained which is excellent in storage stability and hardening properties of thick films and which has a high hardening rate and remarkably improved surface hardening properties of the adhesive composition itself bulged from between adherends. Particularly, the 2-cyanoacrylate bulged from between the adherends can harden rapidly, so that the vaporization of the 2-cyanoacrylate can be minimized. Therefore, even if the adhesive composition does not have a specific ester group such as an alkoxyalkyl group, an irritant odor and whitening can be reduced (abstract).

Hiraoka discloses that the 2-cyanoacrylate includes all of usually usable esters, and typical examples of the 2-cyanoacrylate include **2-cyanoacrylates** of **methyl**, ethyl, n-propyl, **n-butyl**, iso-butyl, sec-butyl, tert-butyl, amyl, n-hexyl, cyclohexyl, heptyl, n-octyl, 2-ethylhexyl, dodecyl, allyl, propargyl, benzyl, phenyl, **methoxyethyl**, ethoxyethyl, 2-chloroethyl, hexafluoroisopropyl, trifluoroethyl and 2-cyanoethyl (col. 2, lines 56-63).

Typical examples of the usable epoxy resin include n-butyl glycidyl ether, allyl glycidyl ether, 2-ethylhexyl glycidyl ether styrene oxide, phenyl glycidyl ether, cresyl glycidyl ether, p-sec-butylphenyl glycidyl ether, **glycidyl methacrylate**, tert-carboxylic acid glycidyl ester (Cardura E), diglycidyl ether, **(poly)ethylene glycol diglycidyl ether**, **(poly)propylene glycol diglycidyl ether**, **butanediol diglycidyl ether**, etc. (col. 3, lines 24-44).

With regard to the limitation of the claims 8-10, Ederer does not disclose the usage of stabilizers.

Hiraoka discloses that examples of the stabilizer include SO<sub>2</sub>, a sulfonic acid, sultone, lactone, boron fluoride, hydroquinone, hydroquinone monomethyl ether, catechol and pyrogallol (col. 5, lines 13-17).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate cyanoacrylate, a mixture of cyanoacrylates or a mixture of one or more cyanoacrylate(s) with additional anionically polymerizable compounds, etc. and stabilizers as taught by Hiraoka in Ederer's rapid-phototyping production method because 2-cyanoacrylate-based adhesive composition can be obtained which is excellent in storage stability and hardening properties of thick films and which has a high hardening rate and remarkably improved surface hardening properties of the adhesive composition itself bulged from between adherends (US'554, col. 5, lines 36-41), and thus to arrive at the subject matter of instant claim 1 and dependable claims 2-5, 8-10 and 12.

With regard to the limitation of the claim 15, Ederer discloses that preferably, a glycerine solution is used as supporting liquid, additionally proylenglycol 1,2-propandiol or polysorbate can be used (page 11 (lines 14-24)).

With regard to the limitation of the claim 19, Ederer discloses that it is preferred that in methods using a supporting liquid reservoir, the supporting liquid has a density which is only slightly higher than that of the building material, preferably 1.01 to 2 times as high, and further preferably 1.05 to 1.5 times as high (page 11, lines 1-5).

8. Claims 6-7, 11, 13-14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ederer et al. (WO 01/26885 A1) and Hiraoka (U.S. Patent 5,589,554)

as applied to claims 1-5, 8-10, 12, 15 and 19 above, and further in view of Bredt et al. (WO 01/34371).

With regard to the limitation of the claims 6-7, 11, 13-14 and 16-18, the combined teaching of Ederer and Hiraoka does not disclose the following: 1) that the basic aqueous solution is selected from the group of aqueous alkaline earth metal hydroxide solutions; 2) that the additives are selected from the group comprising surface-active compound; 3) additional substances as a crosslinking agent to improve the mechanical properties of the polymer obtained; 4) the addition dyes or pigments to the building material and/or to the bath fluid.

Bredt discloses three-dimensional printing material systems and method, and an article made therefrom. The method includes building cross-sectional portions of a three-dimensional article, and assembling the individual cross-sectional areas in a layer-wise fashion to form a final article. The individual cross-sectional areas are build by using an ink-print head to deliver a fluid to a particular material (abstract).

With regard to the limitation of the claims 6 and 7, Bredt discloses that examples of reactant in the fluid include sodium hydroxide, potassium hydroxide, and ammonium hydroxide.

With regard to the limitation of the claim 11, Bredt discloses that the ionic reactant in the fluid is an electrolyte, which can be a small molecule or a polymer having multiple charged sites, i.e. a polyelectrolyte. The particulate reactant can be soluble or insoluble in the fluid. Examples of soluble particulate cationic polyelectrolytes include polyallylamine hydrochloride, polybutylaminoethyl methacrylate, polyethyleneimine,

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polyvinyl pyridine and poly diallyldimethylammonium chloride. Examples of insoluble cationic polyelectrolytes include Empresol N, Unicat KC1420, Unicat C3T (all from Kalamazoo Paper Chemicals), Pencat 600, Apollo 4280 (from Penford Corp) and aminosilane-functionalized glass beads. For these examples, the reactant in the fluid is a soluble anionic reactant such as sulfonated polystyrene, polyacrylic acid (PAA), polymethacrylic acid (PMAA), polyvinyl sulfonic acid, alkali metal salts of polyacrylic acid, alkali metal salts of polymethacrylic acid, alkali metal salts of polyvinyl sulfonic acid, ammonium salt of polyvinylsulfonic acid, ammonium salt of sulfonated polystyrene, ammonium salt of polyacrylic acid, ammonium salt of polymethacrylic acid and copolymer of sodium styrene sulfonate with maleic anhydride (page 10, line 9 through page 11, line 14).

With regard to the limitation of the claims 13 and 14, Bredt discloses that examples of adhesive/cross-linking agent combinations include polyvinyl alcohol/Borax, polyvinyl alcohol/polyethylene oxide and polyethylene oxide/polymethacrylic acid (page 15, lines 5-7).

With regard to the limitation of the claims 16 and 17, Bredt discloses the embodiment which provides a method by which the neither of the reactants has properties of an adhesive, but rather an adhesive is formed upon reaction of the two reactants. The method includes the steps of providing a first layer of a dry particulate material comprising a reactant. A reaction is allowed to occur between the particulate reactant and the reactant to form an adhesive. Formation of the adhesive (or occurrence of the reaction) causes a solidified material to form in the first region (page



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15, lines 9-15). An additional benefit of such system is the ability to self cross-link (page 15, lines 22-23).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate aqueous alkaline or alkaline earth metal hydroxide solution, the above mentioned surface-active compounds, and adhesive /cross-linking agent combinations as taught by Berdt in Ederer and Hiraoka's composition for rapid-phototyping production method because such specific reactant has properties of adhesive, which is formed upon the reaction of the two reactant. Formation of the adhesive, (or occurrence of the reaction) causes a solidified material to form and ability to self cross-link (WO'371, page 15, lines 8-23), and thus to arrive at the subject matter of instant claims 6, 7, 11, 13, 14, 16 and 17.

With regard to the limitation of the claim 18, Berdt discloses particulate material including inert ceramics such as aluminum oxide, aluminum silicate, calcium silicate, silicon dioxide, titanium dioxide, iron oxide, magnesium oxide, etc. (pages 20-21, the bridging paragraph).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the above mentioned additives as taught by Berdt in Ederer and Hiraoka's composition for rapid-phototyping production method as well known pigments with reasonable expectation of success.

9. It is worth to mention that Examiner has cited particular columns and line numbers or figures in the references as applied to the claims for the convenience of the applicant. Although the specified citations are representative of the teaching in the art

and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant, in preparing the responses, **to fully consider the references in entirety as potentially teaching all or part of the claimed invention**, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

10. It is noted that under present practice, second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement filed during the period set forth in 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p). Where information is submitted in an information disclosure statement during the period set forth in 37 CFR 1.97(c) with a fee, the examiner may use the information submitted, e.g., a printed publication or evidence of public use, and make the next Office action final whether or not the claims have been amended, provided that no other new ground of rejection which was not necessitated by amendment to the claims is introduced by the examiner. See MPEP §§ 706.07(a) and 609.04(b).

11. In the light of the discussion above, the rejection of record has not been withdrawn. The rejection remains in force.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Bernshteyn whose telephone number is 571-272-2411. The examiner can normally be reached on M-F 8-5:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael Bernshteyn  
Patent Examiner  
Art Unit 1713

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01/08/2007

  
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